

WHAT IS CLAIMED IS:

1. A method for temporally filtering a video sequence, wherein object motion estimation for arbitrarily shaped segments is used to align corresponding pixels between at least two frames and wherein a weighted average of the color values of said corresponding pixels is  
5 computed.
2. The method of claim 1, further comprising:  
adjusting the weights assigned to one or more frames for pixels that lie within  
a blur region near a segment boundary to reduce the impact of color blur from  
10 segments that are no longer adjacent.
3. The method of claim 1, further comprising:  
setting the weight for one or more past frames to zero for pixels that lie within  
a newly exposed area.  
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4. The method of claim 1, further comprising:  
determining additional motion information across GOP boundaries to allow  
filtering across these boundaries.
- 20 5. The method of claim 1, further comprising:  
calculating a lighting offset, expressing the difference in lighting for a segment  
between two frames, and using said lighting offset to correct the lighting  
discrepancies caused by averaging pixels from frames with different lighting.
- 25 6. An apparatus for temporally filtering a video sequence, wherein object motion  
estimation for arbitrarily shaped segments is used to align corresponding pixels between at  
least two frames and wherein said apparatus computes a weighted average of the color values  
of said corresponding pixels.
- 30 7. A method for temporally filtering a video sequence using motion compensation, the  
method comprising:  
estimating motion of objects between frames in the video sequence;  
aligning pixels from a current frame with matching pixels from select neighboring  
frames according to the estimated motion of a surrounding object; and

calculating a weighted average of the aligned pixels from the for each pixel in the current frame to produce a filtered version of the current frame.

8. The method of claim 7, further comprising:  
5        adjusting weights used to calculate the weighted average in order to compensate for blur transitions near object boundaries.
9. The method of claim 8, wherein the adjustment of weights comprises a reduction of a weight multiplier in a blur region near an exposed area.  
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10. The method of claim 8, wherein the adjustment of weights comprises a reduction of a weight multiplier in a blur region between converging objects.
11. The method of claim 7, wherein the estimation of motion is between frames that are  
15        across a group of pictures (GOP) type boundary which does not involve a scene change.
12. The method of claim 7, further comprising:  
          calculating a lighting offset; and  
          applying the lighting offset prior to calculating the weighted average in order to  
20        compensate for lighting shifts.